

Appl. No. 09/826,583
Amdt. dated Oct 14, 2004
Reply to Office action of May 14, 2004

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AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions, and listings, of claims the application.

LISTING OF CLAIMS

Claim 1. (currently amended) A fluidic logic device comprising:

- an elastomeric block comprising a first elastomeric layer and a second elastomeric layer, the first and the second elastomeric layers each having therein recesses having a depth dimension between 0.01 μm and 1000 μm , wherein a recess within the first elastomeric layer and a recess in the second elastomeric layer overlap with a membrane portion of one of the elastomeric layers being deflectable into one of the recesses of the elastomeric layers; and
- a plurality of microfabricated channels formed in the elastomeric block from the recesses, each channel containing a pressure or flow representing a signal, a change in the pressure or flow in a first channel resulting in a change in the pressure or fluid flow in a second channel consistent with a logic operation.

Claim 2. (original) The device of claim 1, where the change in pressure or flow in the second channel is nonlinear with respect to the pressure or fluid flow changes in the first channel.

Claim 3. (original) The device of claim 1 wherein a one way valve is positioned in at least one of the first channel and the second channel.

Claim 4. (original) The device of claim 3 wherein: the second channel comprises an inlet in communication with an outlet through a flow restrictor, the second channel including a junction upstream of the flow restrictor; and the first channel comprises at least two

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control channels connected at the junction through one-way valves, such that pressures of the control channels are reflected at the outlet consistent with an AND-type truth table.

Claim 5. (original) The device of claim 1 wherein: the second channel comprises an inlet portion and an outlet portion; and the first channel comprises at least two control channels adjacent to the first channel and separated from the first channel by respective first and second elastomer membranes, such that application of pressures to the control channels deflects at least one of the first and second membranes into the flow channel to reflect a pressure at the outlet consistent with a NOR-type truth table.

Claim 6. (original) The device of claim 1 wherein: the second channel comprises first and second inlet portions that merge to form an outlet portion; and the first channel comprises first and second control channels adjacent to the first and second inlet portions, the first control channel separated from the first and second inlet portions by respective first and second membranes, and the second control channel separated from the first and second portions by respective third and fourth membranes, such that application of control pressures to the first and second control channels deflects at least one of the first, second, third, and fourth membranes into the first and second inlet portions to reflect a pressure at the outlet consistent with a NOR-type truth table.

Claim 7. (original) The device of claim 6 further comprising an amplification structure positioned between the first channel and at least one of the first, second, third, and fourth membranes.

Claim 8. (original) The device of claim 1 wherein an outlet of the second channel is in fluid communication with a first channel of a second fluidic logic device.

Claim 9-43. (canceled)

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